U.S. Environmental Protection Agency
Science Advisory Board
Radiation Advisory Committee (RAC) RadNet Review Panel

Summary Minutes of Public Conference Call Meeting[1]
March 20, 2006

Committee: Radiation Advisory Committee (RAC) RadNet Review Panel of the U.S. Environmental Protection Agency's (EPA's) Science Advisory Board (SAB). (See Roster - Attachment A).

Date and Time: Monday, March 20, 2006 from 10:00 a.m. to 1:00 p.m. eastern standard time (See Federal Register Notice - Attachment B).

Location: This is a conference call with no location announced. All participants were connected via the conference lines.

Purpose: The purpose of this public conference call meeting is to review and conduct edits to the March 9, 2006 Working Review Draft Report #1 (See Attachment F) prepared by the RAC RadNet Review Panelists in response to this advisory activity.[2] The RAC's RadNet Review Panel's draft report is in direct response to the Environmental Protection Agency's draft document entitled *"Expansion and Upgrade of the RadNet Air Monitoring Network, Vols. 1 &2 Concept and Plan,*" dated October 2005. (See Meeting Agenda - Attachment C).

SAB/RAC RadNet Review Panel Attendees: Panel Members Dr. Jill Lipoti, RAC and RadNet Review Panel Chair, Dr. Bruce Becker, Dr. Antone Brooks, Dr. Gilles Bussod, Dr Brian Dodd, Dr. Shirley Fry, Dr. William Griffith, Dr. Richard Hornung, Mr. Richard Jaquish, Dr. Jan Johnson, Immediate Past RAC Chair; Dr. Bernd Kahn, Dr. Jonathan Links, Dr. Gary Sandquist, Dr. Richard Vetter, and Ms. Susan Wiltshire (stayed on until 11:20 am) were present. (See Attachment A); Dr. K. Jack Kooyoomjian (Designated Federal Official) - SAB Staff Office, participated. Dr. Helen Grogan was unable to participate.

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[1] NOTE: Please note that these minutes represent comments that are individual statements and opinions and are not necessarily consensus comments at this stage of the process in the review of any given topic. In all cases, the final SAB report to the EPA Administrator represents the consensus on the topic.

[2] See also the Feb 28, 2005 minutes where the RAC was briefed by the Agency's ORIA staff on the proposed National Monitoring System (NMS) Upgrade to the Environmental Radiation Ambient Monitoring System (ERAMS), now referred to as RadNet. See also the Dec. 1, 2005 minutes for the first public conference call of the RAC's RadNet Review Panel, as well as the Dec. 19-20, 2005 minutes of the first face-to-face meeting of the RAC's RadNet Review Panel.

Agency Staff Attendees: ORIA, Washington, DC: Dr. Mary E. Clark; ORIA/National Air and Radiation Environmental Laboratory (NAREL) staff, Montgomery, AL: Dr. John Griggs, Robert Lowry, Charles (Chuck) Petko, and Ms. Rhonda Sears; ORIA/Radiation and Indoor Environments National Laboratory (RIENL) staff in Las Vegas: Mr. Brian Moore.

Public Attendees: Mr. Jim Monde and Mr. Jeff Sawyer (for Adam Gross) from Thermo Electron.

Meeting Summary: The meeting followed the issues and general timing as presented in the meeting Agenda (see Meeting Agenda - Attachment C). No written comments were submitted to the Committee for the meeting, but public verbal comments were offered during the course of the conference call meeting. All public commenters were offered the opportunity to submit written comments following the meeting, but none were received.

Welcome and Introductions: Dr. K. Jack Kooyoomjian, Designated Federal Officer (DFO), opened the meeting at approximately 10:03 am with identification of the participants logging into the call and with opening remarks. He introduced himself as the DFO for the Radiation Advisory Committee's (RAC) RadNet Review Panel, explained the purpose of the call, indicating that this Panel operates under the requirements of the Federal Advisory Committee Act (FACA) and is chartered to conduct business under the SAB Charter. He explained that, consistent with FACA and with EPA policy, the deliberations of the RAC's RadNet Review Panel are conducted in public meetings, for which advance notice is given. He explained that he is present to ensure that the requirements of FACA are met, including the requirements for open meetings, for maintaining records of deliberations of the RAC's RadNet Review Panel, and making available the public summaries of meetings, as well as providing opportunities for public comment.

Dr. Kooyoomjian also commented on the status of this Panel's compliance with Federal ethics and conflict-of-interest laws. The RAC's RadNet Review Panel follows the Committee and Panel Formation Process, as well as determinations made by the SAB staff and others pertaining to confidential financial information protected under the Privacy Act. Each Panelist has complied with all these provisions; there are no conflict-of-interest or appearance issues for any of the Panelists, nor did any individual need to be granted a waiver or be recused. Dr. Kooyoomjian further noted that the Form 3110-48 Financial Disclosure and Ethics Training was completed by all Panelists and is on file at the SAB, that there is no need for disclosure, and that there is no particular matter that may pose a potential conflict of interest. He advised that the Panel should briefly introduce themselves and their interests in relation to the RadNet review topic just to inform the interested parties and the public of their relations and experiences to the issues pertaining to the discussions to take place today.

Dr. Lipoti provided some brief opening remarks at 10:15 am, welcoming members and participants (Roster, Attachment A), reviewed the meeting agenda (Attachment C), and then asked that the Panelists briefly "log-in" and introduce themselves, since she came on the line after the first introductions. She introduced herself as Chair of the RAC's RadNet Review Panel, and then asked the Panelists to also briefly introduce themselves. Dr. Lipoti then asked the members of the ORIA Staff and the public participants to also introduce themselves.

Overview of the Meeting:

After the introductory remarks and statements of interest by the Panelists, and introductions of the Agency staff and other participants, at 10:20 am, Dr. Lipoti opened up the meeting to the Panel. The Panelists observed that some sections of the March 9th draft report (see Attachment F) are duplicative and need to be merged and edited. Dr. Lipoti indicated that she left the text this way in the first working review draft, because she wanted to preserve the individual contributions, even though there were redundancies. The Panelists recommended a number of shifts in the text among the individual charge questions.

One item raised by the Panelists was the inconsistent use of SI units. The Panel decided that since instruments likely to be in use by state and local emergency responders use the old units, and the emergency responder training is presented in the old units, they would concede that SI units may just be noted in parentheses, in preparation for a future time when SI units would be in common usage.

The Panel did recommend that EPA cross-calibrate across the detectors. A discussion followed on the utility of the data for use by the modelers. The Panelists further recommended that the Agency should strive to be sure that the underpinnings of the numbers are sufficiently (not defined) scientifically rigorous. A discussion followed that if there is only one reading in a very large area, and if the number collected is not rigorous or correct, then the projections could be way off the mark. The discussion followed that decision-makers are likely to be concerned about order-of-magnitude changes. A discussion followed on the outputs of devices, the distribution and various possible configurations of the monitors, and the utility of the network as contrasted to the output of the model.

The Panel agreed that one of the essential purposes of the monitors is to determine that radiation above background is in fact, not present. However, if an event or simultaneous events occur, it would be helpful to determine such details as if there is a plume, and where is it going over time. One would hope that the thoughtful placement of the monitors and the model selected would be accurately predictive of the distribution that is occurring. This typically involves a combination of readings, coupled with what the model is predicting. The output of the model is usually based on inputs from a number of monitors. The Panel's contention is that, if it is decided that the output of the model is the primary goal, than the siting plan for the monitors would change dramatically from the current proposal. Fundamental questions were raised and discussed by the Panelists in terms of siting the monitors.

Most Panelists liked the approach of the current Agency draft report. It was the sense of the Panel that if the RadNet Review Panel was involved in the very beginning, the Panel may have come up with a different configuration. However, the Panel recognized the realities of the Agency taking opportunities to enhance the RadNet system and has basically accepted what EPA has done. However, the Panel believes that there is room to perhaps improve the system in a reasonable and strategic manner.

The Panel appeared to settle in on making "order of magnitude" recommendations. In the big-picture sense, the Panelists thought that one area where they could contribute would be any recommendations focusing on the staging of the monitors and the use of the deployables. The Panelists recognized that they were speaking as if all the monitors currently exist, and the fact is that in reality not all of the 180 proposed monitors may ultimately be installed, if there is a budget cut, for instance.

A discussion followed on the current SAB's review on the Agency's draft modeling guidance that was developed by the Agency's Council for Regulatory Environmental Modeling (CREM) in November of 2003, as well as the recommendations contained in the Feb 24, 2006 Quality Review Draft of the SAB's Regulatory Environmental Modeling (REM) Guidance Review Panel (See Attachment J). The Panelists discussed the utility of citing the current modeling guidance as recommended practices in the modeling area. Dr. Kooyoomjian volunteered to provide the current draft to the RAC's RadNet Review Panel, once it is posted onto the SAB's Web site. (POSTSCRIPT: The February 24, 2006 Quality Review Draft was posted around March 24th onto the SAB's Web site.)

The Panel acknowledged that the RadNet is a monitoring system for identifying if an event takes place, and that for a real event, a lot more in the way of supplemental information would typically be needed to confirm and properly monitor the event, if actions to mitigate the event become necessary. The Panel also postured that it might be useful, given the mission to ask the question, ...*"What if the Agency only ends up with 150 monitors (due to budget or other issues), instead of 180 monitors as they planned? .... also ... Will the system be able to deliver on the stated objectives?"*

The Panel acknowledged that EPA has already cut down on the monitors, because of limits on available funding. Should the Panel accept the pragmatic premise that they are on the right track? Shouldn't the Agency be asked to ascertain the validity of the premise of the 180 (or less) monitors, as leading to something workable? If modeling is engaged here, it might assist the Agency to answer the question whether something serious (radionuclide release event(s)) is going on. The Panel then posed a situation. The State of Georgia has its own 10 monitors, and they could help if the monitors are calibrated and cross-validated with the EPA monitors. Also, EPA has 40 portable monitors ("deployables"), and the Panel could recommend that the Agency could add or switch monitors, given the local circumstances. A spirited discussion followed (see below).

The Panel discussed the various goals, such as the goal of geographic coverage and its consequences. Other options, such as taking 10 of the contemplated EPA RadNet monitors in California, as well as 2 out of Texas, for instance, to help make a difference in the modeling exercise. The Panel had other recommendations to coordinate with bordering countries (Canada, Mexico).

The Panel recognized that the fixed monitors are not being deployed, nor are they being planned to be deployed, in a grid fashion to primarily serve modeling. The Panel recognized this phenomena as a "chicken & egg" situation, where the Agency needs data, but they also need the (predictive) models, and the models are in fact the tools where the Agency makes use of the monitoring stations. The Panel felt that they could not over-emphasize the importance of using models in a strategic fashion to site the stations. In fact, some Panelists believed that if the modelers were the primary recipients of data from the monitors, then the current siting scheme for the monitors is backward. Further, it would be helpful to conduct sensitivity analysis of models, given the knowledge of such essential details as atmospheric conditions. It was also recognized by the Panel that others (e.g, not the EPA, but perhaps the Inter-Agency Modeling and Atmospheric Assessment Center (IMAAC) will do the bulk of the modeling.)

Given the above discussions, the Panel thought it might be helpful to state different possible missions for the RadNet. One of the concerns nagging the Panel is that there are a lot of models, and the Panel is assuming that the models are going to help in some uniform way. That may not be the case and perhaps the models are not going to help as much as the Panelists believe they could. When it comes to calibrating and then validating models, there are going to be different solutions, and not one easy answer. An optimal model will probably not differ greatly, but there are likely to be "holes." The Panel decided to tackle this issue in Charge Question #2 in the next round. The Panel also wishes to recognize that what EPA is trying to do may not be optimal, given the possible/likely(?) future funding constraints. This means that the Agency could likely be very restricted and even hampered in its options to design an optimal system. The Panel responded by suggesting that perhaps there should be more strategic use of the deployable monitors, and the Panel's current March 9th draft did not emphasize this as strongly as it should. The Panel also thought this issue could be posed in an overall question addressing the Agency's capabilities.

Public Comment: At 11:39 am, Dr. Lipoti asked if there were any members of the public who wished to address the Panel. Mr. Jeff Sawyer from Thermo Electron observed that he believed there are a couple of issues to raise to the Panel and the Agency. He indicated that the biggest challenge, in his view, is not the monitors, but the data representation. Tying fixed and deployable monitors has to be done with the models aiding in this process. People from different levels (local, states, regions) need to be involved. The monitors also need to be robust enough to survive a specific event or accident. The monitors are deployable, but in reality, they are really not that mobile. The Agency may have to choose to move monitors, depending on what is happening. For instance, if there is an incident at a Stadium or some other public place, perhaps up to 40 monitors may need to be moved, pooled and deployed with others to calibrate

the system.

Mr. Sawyer mentioned the use of glass fiber filters in monitoring, and offered his opinion that a flatter millipore filter is much better for correcting for radon progeny, but that almost nobody uses glass fiber filters anymore.

The public comment period concluded at 11:45 am.

Feedback from Agency Staff: At 11:45 am, Dr. Mary E. Clark, Assistant Director for Science of ORIA, began providing feedback to the Panel. She advised the Panel that the Agency currently has 40 deployable monitors, and thanked the Panel for their open discussion, which she and the staff thought was really very helpful. She indicated that she would provide edits to the current March 9, 2006 draft, and asked if the Panel had any questions of her or the ORIA Staff. The Panel had no questions at this time.

Continued Panel Discussion:

Page-by-page edits: At 11:49 am, Dr. Lipoti suggested that the Panel conduct a page-by-page edit of the Panel's March 9, 2006 draft report. The Panel started at page 11, covered briefly some points a couple of pages prior to Page 11, and proceeded forward through the text with the edits. The Panel discussed specific edits and resolved them as a "Panel of the whole." Brief highlights and excerpts of the discussion follow. For instance, the Panel agreed to move some material in Chapter #3 to Chapter #4, put most of the siting issues in CQ #2 (Chapter 4), leave monitor location as proposed in Chapter #3 (CQ #1), merge Sections 4.3 and 6.4, because they are virtually the same. The group's sense is to eliminate the current Chapter #4 on siting monitors by merging the text into other portions of the revised text.

The Panel in the current draft, p. 14, line 26 felt that ..."real-time monitoring is not as important as expanded coverage." If EPA encounters less funding, there should be an emphasis to acquire the expanded coverage with the originally-planned 180 monitors. A discussion followed on real-time monitoring. Is it 2 days? ...10 days? It was a consensus of the Panel that the Agency staff need to provide more rationale on what is real-time monitoring. A discussion followed on the logistics of sampling. The Agency is looking at days before the sample gets collected and analyzed. However, when an event occurs, the Agency has the sample sent via messenger to the laboratory, and it is received the very next day.

The following question was asked by one Panelist ... *"How much does it save to eliminate the real-time capability?"* The Agency staff indicated that it is a factor of 10 versus Real-Time. One Panelist asked...*"Could you buy ordinary monitors and start with them, and expand their capability?"* The Agency indicated that it is far better and easier to manage when working with contractors to specify contractually what is needed up front, rather than trying to improve the monitor's capabilities after the fact. Ordering in pieces is very problematic and presents very real and significant challenges for the Agency. The Agency staff indicated that

currently there is an obligated delivery for 52 monitors, and that by April 2007, there will be about 60 monitors in place.

The Agency staff noted that funding for the Office of Homeland Security (OHS) is proposed as part of the "package," and is intended to be "real time," (however this term may be defined) and that the siting of the monitors is a part of the infrastructure that is in place. The Panel stressed that they are very supportive of the plan to complete build-out with the 180 planned monitors, and to acquire the "real-time" monitoring capability. The Panel thought it would be helpful to focus on meeting the mission objectives, and what is most important appears to be the expanded coverage.

A variety of edits and topics were discussed in the page-by-page edits by the Panel. Some discussion took place with regard to the need for a clarifying statement with respect to emergency response data, the need for confirmation testing by the NAREL, the role of internal testing versus contractor testing, the need for more internal testing of the equipment, the need for more acceptance testing of at least one unit of each batch of monitors, even with limited resources. There was also the suggestion to compare the RadNet system with other systems, and how these monitors compare with other monitors out there, and the need for cross-calibration of the monitors to enhance capabilities for all systems.

At approximately 12:20 pm, Dr. Lipoti asked for volunteers for writing up the testing issues. Bernd Kahn will draft something and send it to Dr. Links and then to Dr. Lipoti, with a cc to Dr. Kooyoomjian.

The Panel may need to further explain and expand upon the need to have a moderately priced (not expensive) and field-ruggedized piece of equipment in the field. Other specific edits were recommended, such as on page 18, line 11 to change "calculated" deaths to "estimated" deaths per nanocurie, and to change deaths to "risks" per nanocurie. The Panel recognized that it is proper for EPA to decide on the appropriate risks.

A discussion took place with regard to page 21, lines 24-27 regarding storage of the monitors. The Panel recognized that if something happens to EPA's NAREL and RIENL, then the Agency needs to move the monitors to other parts of the country. In order to calibrate the monitors, the Agency would need trained staff available in other locations which may be a human resources staffing issue.

Some of the Panel agreed to scrutinize the data to make it more understandable and useful. A discussion took place on the Agency's policy of not releasing data until it is QA'd.

The Panel ended their edits at page 29, since they were running out of the allocated conference time.

Summary & Action Items in Preparation for the April 10, 2006 Public Conference Call, 1-4 pm EST:

At 12:55 pm, Dr. Lipoti provided a brief summary. Dr. Lipoti promised to start with Dr. Fry's edits which were received just prior to the conference call. The Panel agreed to switch from 1st to 3rd person in the edits. A brief discussion took place of different data points and data screens, as well as other "cleanup" and clarification edits.

It was understood by all the Panelists present that their edits should be submitted to Dr. Lipoti, with a cc to Dr. Kooyoomjian no later than Thursday, March 30th. Dr. Lipoti thanked all the participants and indicated that she will merge the edits for the next public conference call to take place on Monday, April 10th from 1:00 pm to 4:00 pm EST.

There being no additional business to be discussed, Dr. Lipoti adjourned the meeting at 1:02 pm on March 20, 2006.

Respectfully Submitted:

/S/
K. Jack Kooyoomjian, Ph.D.
Designated Federal Official
Radiation Advisory Committee (RAC)
RadNet Review Panel

Certified as True:

/S/
Dr. Jill Lipoti, Chair
Radiation Advisory Committee (RAC)
RadNet Review Panel

List of Attachments

The following meeting materials are available on the SAB Web site, http://www.epa.gov/sab, at the March 20, 2006 Radiation Advisory Committee (RAC) RadNet Review Panel Meeting page.

Attachment	Description
A	Radiation Advisory Committee (RAC) RadNet Review Panel Roster dated November 22, 2005
B	*Federal Register* Notice: March 1, 2006, Vol. 71, No. 40, pages 10501-10502
C	Meeting Agenda dated March 10, 2006
F	The RAC RadNet Panel Working Review Draft Report #1, dated 03/09/06

The following meeting materials are available in hardcopy from the SAB Staff Office, U.S. Environmental Protection Agency (MC-1400R), 1200 Pennsylvania Ave, NW, Washington, DC 20460:

Attachment	Description
J	Regulatory Environmental Modeling (REM) Guidance Review Panel, Quality Review Draft dated February 24, 2006
K	ORIA Review Document entitled *"Expansion and Upgrade of the RadNet Air Monitoring Network, Volume 1 & 2, Concept and Plan,"* Prepared for the Radiation Advisory Committee RadNet Review Panel, Science Advisory Board, U.S. Environmental Protection Agency, Prepared by the office of Radiation and Indoor Air, U.S. Environmental Protection Agency